EN15 Accidental oil spills from marine shipping

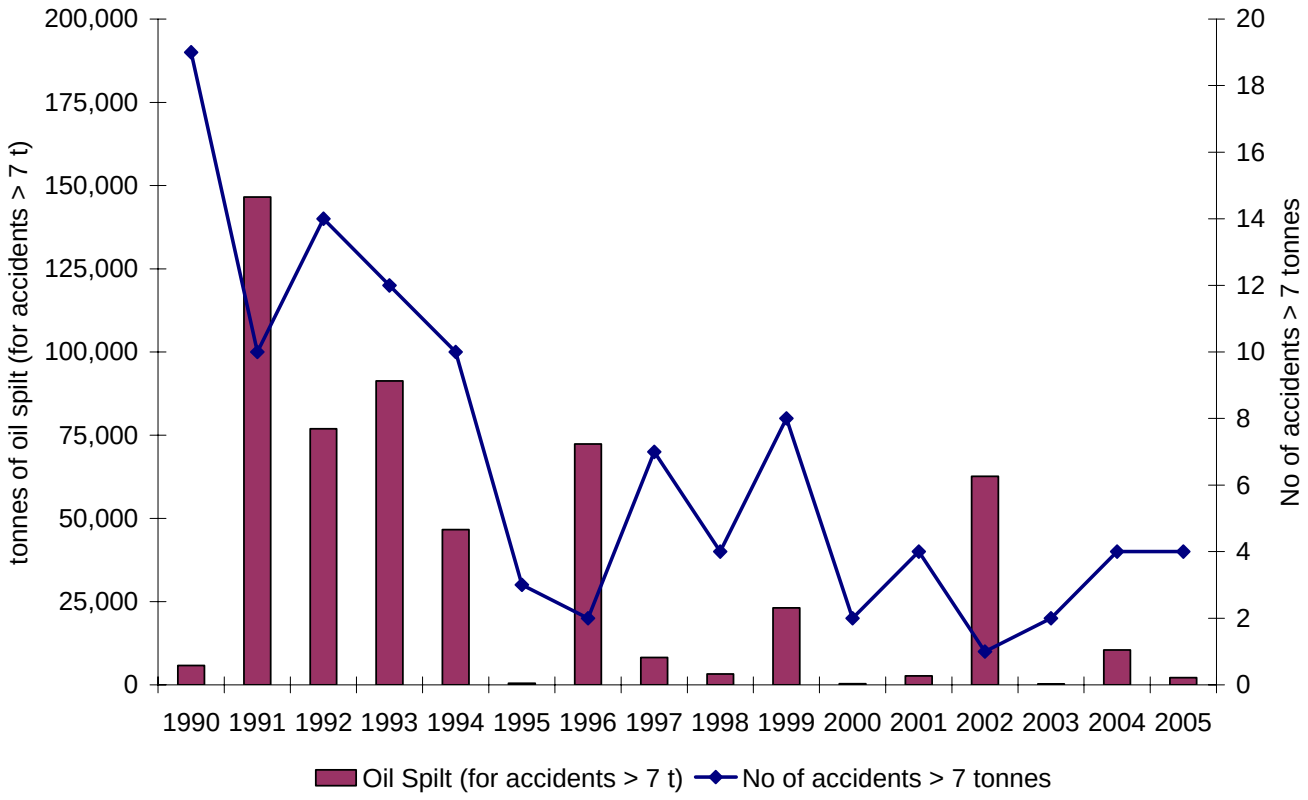
Key message

Despite the overall decrease in the number of accidental oil spills in European waters over the period 1990-2005, major accidental oil tanker spills (i.e. those greater than 20 000 tonnes) still occur at irregular intervals. Large accidental oil spills account for about 10–15 per cent of all oil that enters the ocean world-wide every year (the major source of anthropogenic marine pollution being constituted by land-based discharges).

Rationale

Oil spills to marine areas have a significant impact on marine ecosystems. The consistency of oil can cause surface contamination and smothering of marine biota, and its chemical components can cause acute toxic effects and long-term accumulative impacts. The environmental impact following a spill depends on a number of factors, including not only the size of the spill, but on the spread of the oil slick, the toxicity and persistence of the oil and the sensitivity of the environmental region affected.

Fig. 1: Accidental oil tanker spills (above 7 tonnes per spill), European seas



Data source: International Tanker Owners Pollution Federation Ltd, ITOPF, 2006

Note: European seas cover the Northeast Atlantic, Baltic, Mediterranean and Black Sea; oil spilt in an incident includes all oil lost to the environment, including that which is burnt or remains in a sunken vessel. Despite the fact that the vast majority of spills are less than 7 tonnes, data on numbers and amounts are unreliable and such accidents are regarded to have a relatively small contribution to the overall quantity of oil spilled into the marine environment.

1. Indicator assessment

Accidental oil tanker spills into the European Seas have decreased significantly over the past 17 years. From the total amount of oil spilt in large accidents (i.e. more than 7 tonnes) during the 1990-2005 period (553 000 tonnes), two thirds were spilt over the period 1990–1994. During the five year periods 1995–1999 and 2000–2004, around 19 % and 14 % respectively were spilt. In 2005 2 100 tonnes have been released into the environment. However, this trend is to a large extent dependent on the occurrence of large accidents, as a few very large accidents are responsible for a high percentage of the oil spilt from maritime transport. For example, during the period 1990–2005, of 106 accidental spills over 7 tonnes, just 7 accidents (causing spills of around 20 000 tonnes or more) account for 89 % of the spilt oil volume (Fig. 2).

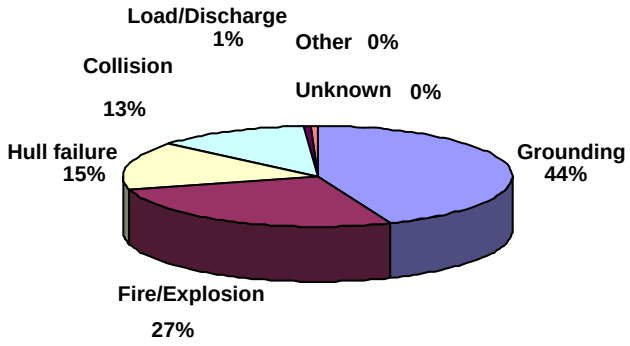
Such major accidents still occur at irregular intervals. Nevertheless, the average number of accidental oil spills above 7 tonnes in European waters has decreased significantly. While on average 13 accidents per year were reported for the period 1990–94, 4.8 accidents per year over the 1995–1999 and 2.6 accidents per year for the 2000–2004 period occurred. In 2005, 4 such accidents have been reported, like in 2004. If all accidents (i.e. including also accidents resulting in spills < 7 tonnes) are taken into account, the drop is even more significant with averages of 31.4, 8.8 and 8 accidents per five-year period respectively. In total 8 accidents have resulted in oil spills in European waters in 2005. Grounding of the vessel is by far the most important factor for oil spilt into the sea accounting for 44 % of the total volume, when the spilt volume is examined (for all accidents > 7 tonnes) followed by fire/explosion (27 %), hull failure (15 %) and collision (13 %) (Fig 3).

Fig. 2: Major accidental tanker oil spills (around 20 000 tones and more), in European Seas

Ship name	Year	Location	Oil spilt (tonnes)	Cause
Amoco Cadiz	1978	Off Brittany, France	223 000	Grounding
Haven	1991	Genoa, Italy	144 000	Fire/Explosion
Torrey Canyon	1967	Scilly Isles, UK	119 000	Grounding
Urquiola	1976	La Coruña, Spain	100 000	Grounding
Jakob Maersk	1975	Oporto, Portugal	88 000	Grounding
Braer	1993	Shetland Islands, UK	84 000	Grounding
Aegean Sea	1992	La Coruña, Spain	73 500	Grounding
Sea Empress	1996	Milford Haven, UK	72 360	Grounding
Prestige	2002	Off Cap Finistere, Spain	62 657	Hull failure
Nassia	1994	Black sea Turkey	33 000	Collision
Erika	1999	Off Brittany, France	19 800	Hull failure

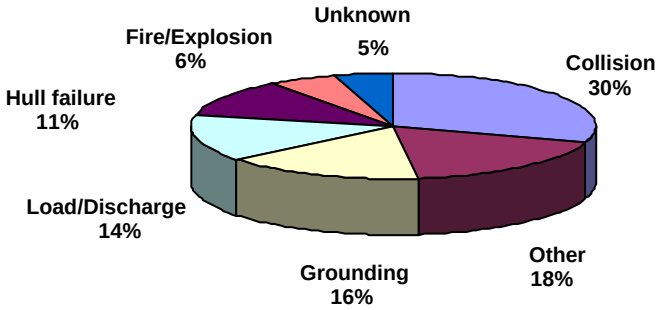
Data Source: ITOPF 2006

Fig. 3: Oils spills and causes of accidents in European Seas (for accidents above 7 tonnes per spill



Volume of oil spilled per cause (for accidents above 7 tonnes per spill) in European Seas, 1990-2005

Data Source: ITOPF 2006



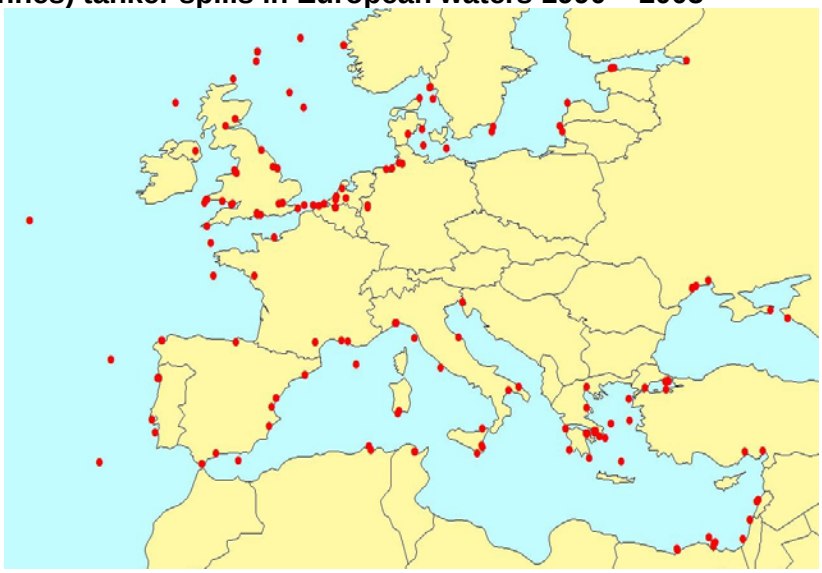
Causes of accidents (above 7 tonnes per spill) in European Seas, 1990-2005

Data Source: ITOPF 2006

The decrease in oil spilt into the sea was achieved despite a rise in oil consumption and related imports (EUROSTAT, 2005a,b,c). This rise in imports has led to a higher risk of oil spills since over 90 % of oil products in Europe are transported by sea. A more rapid introduction of double hulls for tankers is expected to help to further reduce this risk. Other actions that are anticipated to reduce the risk of future spills include the enforcement of traffic monitoring and information system legislation, and

the enforcement of the law against ship-source pollution — including criminal sanctions for pollution offences. The establishment of the European Maritime Safety Agency (EMSA) is expected to play a role in reducing the risk of accidental oil spills from tankers into the sea.

Fig 4. Large (> 7 tonnes) tanker spills in European waters 1990 – 2005



Data Source: ITOPF 2006

2. Indicator rationale

2.1 Environmental context

Oil spills to marine areas have a significant impact on environmental quality affecting all aspects of marine ecosystems. The consistency of oil can cause surface contamination and smothering of marine biota, and its chemical components can cause acute toxic effects and long-term accumulative impacts. Marine life may also be affected in clean-up operations, either directly or through physical damage to marine and coastal habitats.

The amount of oil spilt is, however, not the only factor determining the extent of environmental damage that is caused by the oil. Although in general a larger spill bears a greater inherent risk of environmental damage, a smaller spill at the 'wrong time/wrong season' and in a sensitive environment may prove much more environmentally harmful than a larger spill at another time of the year in another, or even the same, environment. Important factors related to the impact of an oil-spill on wildlife include the spread of the oil slick, the type of oil spilled, its movement and weathering characteristics, the location of the spill, the area of estuary, sea and foreshore impacted by oil, the sensitivity of the regional environment, e.g. proximity to bird breeding colonies, the number of different habitats impacted, such as rock shore, beach, mangrove, wetland, the timing of the incident (during seasonal breeding, bird migration), the nature, toxicity and persistence of the oil; and the variety of species at the spill location. The impacts of accidental oil-spills can be catastrophic on coastal zones designated as having high ecological quality. Spills can also have severe repercussions on tourism, aquaculture and fisheries in affected areas. The negative effects of an oil-spill may eventually fade away, but in many cases it will be a matter of several years, even decades, before an area or ecosystem has fully recovered from a spill that caused extensive damage.

Oil tanker accidents account for 10–15 per cent of all the oil that enters the ocean world-wide every year. Land-based discharges — e.g. inputs from industrial effluents, urban and river run-off, sewage and atmospheric inputs from land industry — constitute the major source of anthropogenic marine pollution (Global Marine Oil Pollution Information Gateway, 2005; Clark, 1999). This indicator shows reported oil-spills (above seven tonnes per spill) from tankers, combined carriers and barges in the marine environment of North East Atlantic, Baltic and Mediterranean Sea. It provides a partial indication of the total amount of oil released to the marine environment from the transport of oil as large oil spills account for the vast majority of the volume of spilt oil. Oil spills and discharges below 7 tonnes from tankers and other shipping, and spills that are not reported or detected have not been included due to lack of data availability and data quality.

2.2 Policy context

The Decision No 2850/2000/EC of the European Parliament and of the Council of 20 December 2000 has set up a Community framework for cooperation in the field of accidental or deliberate marine pollution.
Accidental oil tanker spills are addressed both on a European and an international level. The Erika I package groups a number of measures:

- Directive 2001/106/EC concerning the enforcement, in respect of shipping using Community ports and sailing in the waters under the jurisdiction of the Member States, of international standards for ship safety, pollution prevention and shipboard living and working conditions (port state control). The Directive, amending Directive 95/21 on port state control, will increase both the intensity and the frequency of compulsory ship inspections for substandard vessels;
- Directive 2001/105/EC on common rules and standards for ship inspection and survey organisations and for the relevant activities of maritime administrations is designed to tighten up on procedures for authorising and monitoring the performance of classification societies;
- Regulation (EC) No 417/2002 on the accelerated phasing-in of double hull or equivalent design requirements for single hull oil tankers, amended by regulation EC 2172/2004. This implies a gradual phase-out of single-hull oil tankers from EU-waters by 2015.

A number of additional decisions and policies have been implemented recently, including the Emergency Protocol concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea, signed in Valletta on 25 January 2002. In addition to this, Council Decision 2004/575/EC, on behalf of the European Community, on the conclusion of the Protocol to the Barcelona Convention for the Protection of the Mediterranean Sea against Pollution, concerning cooperation in preventing pollution from ships and, in cases of emergency, combating pollution of the Mediterranean Sea, was implemented. In 2002, it was decided that a European Maritime Safety Agency would be established (Regulation EC/1406/2002).

In the field of water protection and management, the Dangerous Substances Directive 76/464/EEC includes targets on oil pollution with reference to persistent and non-persistent mineral oils and hydrocarbons of petroleum origin. Targets are total elimination for persistent compounds and specific quality objectives set by Member States for non-persistent compounds. In the field of maritime safety, the Directives 93/75/EEC and 95/21/EC were issued to support the MARPOL 73/78 convention established by the International Maritime Organization for the prevention of pollution from ships.

As far as cooperation in the field of response to marine pollution is concerned, the Council Decision of 23 October 2001 (2001/792/EC) has established a Community Mechanism to facilitate reinforced cooperation in civil protection assistance interventions, covering both civil protection and marine pollution. The general purpose of the Mechanism is to provide, on request, support in the event of major emergencies and to facilitate improved coordination of assistance intervention provided by the Member States and the Community.

The Thematic Strategy on the Protection and Conservation of the Marine Environment (COM(2005) 504 final) and the emerging Maritime Policy (COM(2006) 275) are expected to address the issue of marine pollution in a coordinated and integrated manner

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Meta data

Technical information

1. Data source:
   International Tanker Owners Pollution Federation (ITOPF) http://www.itopf.com/

2. Description of data/Indicator definition:
   Accidental oil spills in excess of 7 tonnes from tankers, barges and combined carriers per country in European waters. This covers all accidental spillages except those resulting from acts of war.
   According to ITOPF, spills are categorised by size (<7 tonnes, 7–700 tonnes and >700 tonnes) and the actual amount spilt is recorded. Information is held on about 10,000 incidents, of which 84 % fall into the smallest category i.e. <7 tonnes. Data on numbers and amounts is incomplete for this category, but it is believed they make a relatively small contribution to the total quantity of oil spilled into the marine environment as a result of tanker accidents. There is reliable data on spills of 7 tonnes and above.

3. Geographical coverage:
   Global data are available at ITOPF. For the purpose of the fact sheet, the geographical coverage is:
   European Seas: NE Atlantic, Baltic, Mediterranean and Black Sea
   EU 25, EFTA (Norway and Iceland), Acceding countries to the EU (Bulgaria, Romania), Candidate country to the EU (Turkey), other Black Sea Countries (Russia and Ukraine), Mediterranean Countries non EU (Syria, Lebanon, Israel, Egypt, Tunisia, Algeria and Morocco)

4. Temporal coverage:
   Since 1974, ITOPF has maintained a database of oil spills from tankers, combined carriers and barges. For the purpose of the fact sheet, the period covered is 1990–2005.

5. Methodology and frequency of data collection:
   Continuous collection of factual data and annual update through ITOPF.

6. Methodology of data manipulation:
   Accident accounts provided by ITOPF for the period 1990–2005 were plotted on map and entries related to inland water accidents were excluded.

Qualitative information

7. Strengths and weaknesses (at data level)
   Convenient indicator based on long-term collection of data by professionals of oil activities. According to ITOPF there is considerable annual variation in both the incidence of oil spills and the amounts of oil lost and so the figures and any averages derived from them should be viewed with caution.

8. Reliability, accuracy, robustness, uncertainty (at data level):
   The individual data are estimates whose accuracy and uncertainty are not specified. Oil spills and discharges below 7 tonnes from tankers and other shipping, and spills that are not reported or detected have not been included due to data availability and reliability issues.

9. Overall scoring (1 = no major problems, 3 = major reservations):
   Relevance: 1
   Accuracy: 2
   Comparability over time: 1
   Comparability over space: 1